# EADSIM

## Extended Air Defense Simulation

U. S. Army Space and Missile Defense Command
Space and Missile Defense Battle Lab

Extended Air Defense Simulation (EADSIM) is a system-level simulation of air, space, and missile warfare. EADSIM provides an integrated tool to support joint and combined force operations and analysis. EADSIM is also used to augment exercises at all echelons with realistic air, space, missile, and BMC3I warfare.

EADSIM is used by operational commanders, trainers, combat developers, and analysts to model the performance and predict the effectiveness of ballistic missiles, surface-to-air missiles, aircraft, and cruise missiles in a variety of user-developed scenarios. EADSIM supports the four pillars of theater missile defense in a full tactical context by modeling:

- **Active Defense**
  - Surface-to-Air engagements
  - Air-to-Air engagements
  - Multi-tier engagements
  - TBM engagements (boost, midcourse, terminal phases)
- **Passive Defense**
  - IR signature
  - Radar signature
- **Attack Operations**
  - Surface-to-Surface attacks
  - Air-to-Surface attacks
  - Intelligence, surveillance and reconnaissance
- **BM/C$^3$I**
  - Engagement logic
  - Command and control structure
  - Communications networks
  - Protocols

EADSIM models fixed- and rotary-wing aircraft, tactical ballistic missiles, cruise missiles, infrared and radar sensors, satellites, command and control structures, sensor and communications jammers, communications networks and devices, and fire support in a dynamic environment which includes the effects of terrain and attrition on the outcome of the battle.

EADSIM is used for scenarios ranging from few-on-few to many-on-many. It represents all the missions on both sides. It is unique in the scope of modeling at such a level of detail, where each platform (such as fighter aircraft) is individually modeled, as is the interaction among platforms. It models the Command and Control (C2) decision processes and the communications among platforms on a message-by-message basis. Intelligence, surveillance, and reconnaissance is explicitly modeled to support offensive and defensive applications.

EADSIM provides a number of distributed simulation, operational planning, exercise, training, and wargaming interfaces. These include Distributed Interactive Simulation (DIS), the Aggregate Level Simulation Protocol (ALSP) capabilities, and the High Level Architecture (HLA) capability. Other interfaces include our Force on Force Interactive Retasking Environment (FIRE), operational planning tool, and a number of operational database interfaces.

EADSIM is being used by DoD, OSD, U.S. agencies and internationally at more than 350 sites around the world. It is used by 16 foreign users through Memoranda of Agreement and Foreign Military Sales. EADSIM is used extensively for studies to include: the TMD COEA, NATO Feasibility Study, AOA, TMD, CMD, and ISR studies.

Of particular note, EADSIM was used successfully by the U.S. Air Force Studies and Analyses Agency to analyze attrition, Suppression of Enemy Air Defense missions, and refueling operations during Desert Shield and Desert Storm. Desert Storm's chief air campaign planner, Brig. Gen. Glosson, stated that EADSIM "saved lives and equipment." In addition, the 32nd Army Air Defense Command used EADSIM during both operations to analyze proper positioning of PATRIOT in Israel and Turkey. EADSIM is being used today in operation planning for Enduring Freedom and Iraqi Freedom.

**For more information, please contact:**

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